REMARKS

This application has been reviewed in light of the Office Action dated July 22, 2004. Claims 1-10, 16, 17 and 19-23 are presented for examination. Claims 11-15 and 18 have been cancelled without prejudice or disclaimer of subject matter (and will not be mentioned further), and Claims 1, 3, 6, 8, 16 and 20, the independent claims, have been amended to define still more clearly what Applicants regard as their invention. Favorable reconsideration is requested.

In the Office Action, Claims 1-10, 16, 17 and 19-23 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent 5,255,013 (Ng et al.), and Claims 16, 17 and 19-23 were rejected under 35 U.S.C. § 103(a) as being obvious from U.S. Patent 5,687,002 (Itoh) in view of U.S. Patent 6,052,141 (Takeuchi).

Independent Claim 1 is directed to a recording control apparatus which performs recording on a recording medium by using a recording head. According to Claim 1, the recording head includes at least one recording element array in which plural recording elements are aligned along a predetermined direction, and the apparatus also comprises a driving correction table which includes pixel correction data for correcting a recording driving characteristic of each recording element constituting the recording element array by the pixel unit of image data, and in which the pixel correction data is provided corresponding to *plural lines of the image data in a sub-scan direction.* Also provided as part of the apparatus are driving control means for correcting light emission characteristic dispersion of each recording element by means of an average value of a recording driving time of each recording element of the recording

element array, by modifying the recording driving time by the pixel unit, according to switching of the correction data for each line based on the driving correction table including the pixel correction data *of the plural lines*.

Ng relates to an LED printhead having a driver that drives each LED based on clocking pulses, in a manner intended to provide a suitable grey level pixel, based on a number of data bits latched in te driver. The printhead also utilizes look-up tables to achieve a correction of the printed data according to the intensity characteristics of each particular LED involved in printing a given pixel. As described at col. 4, line 49, through col. 5, line 11, each LED chip is provided with two driver chips, one of which drives even-numbered LEDs and the other of which drives the odd-numbered ones (and see Fig. 2, as well as col. 5, line 61, through col. 6, line 36). However, the terms "even number" and "odd number" merely refer to the sequence of LEDs along the main-scanning direction. That is, this portion of *Ng* has nothing to do with even-number scan lines and odd-number scan lines, as is incorrectly asserted in the Office Action.

Rather, in the *Ng* apparatus, a printhead light amount correction value exists for only *one* scan line: that is, the LUTs 116 and 118 respectively provide correction data for the even-number dots and for the odd-number dots for a single scan line of the printhead. Moreover, it is clear from col. 5, line 61, through col. 6, line 36, that the light amount correction data for the even-number dots of one scan line are held in the LUT 116, and the light amount correction data for the odd-number dots of one scan line are held in the LUT 118. There is in fact no suggestion, or even hint, in *Ng* of storing data in the LUTs, or anywhere else, for plural scan lines.

Moreover, *Ng* relates to a method of dividing one image line into plural sub-lines according to the number of gradations, and driving each sub-line in correspondence with each bit of available gradation. More specifically, one pixel is divided into eight-bit image data, and an aggregate of the eight sub-lines corresponding to the respective bits represents one pixel (see col. 8, lines 8-36). In this method, if the time allocated to one image line is assumed to T1, the minimum period of the driving pulse for the LED is given by T1/N, where N is the number of image bits, and thus the minimum period of the driving pulse becomes smaller in inverse proportion to an increase in the number of image bits. As a result of this, it is difficult to design the configuration of the logic circuits required for generating the driving pulses.

It should be noted that the structure recited in independent Claim 1 provides a way in which the correction resolution can be improved without permitting the occurrence of a situation like that encountered in *Ng*. In respect of this point, the apparatus of Claim 1 and what is described in *Ng* are in principle different from each other.

More specifically, in the apparatus of Claim 1, the pixel correction data are provided corresponding to the plural scan lines, the data are sequentially extracted with respect to each scan line, and the light emission time is corrected. Thus, the correction of each LED dot is performed with respect to plural scan lines, and in this manner the correction is performed based on the average value of the plural lines. Accordingly, even if it is intended to increase the correction resolution, it is unnecessary to shorten the minimum period of the driving pulse for each line. (This is clearly described in the originally filed specification, for example, at page 31, line 24, to page 32, line 19.) Nothing has been found, or pointed out, in *Ng* that would teach or

suggest any such apparatus as recited in Claim 1, or that would even hint at any way in which the benefits of the apparatus of Claim 1 could be obtained.

For all these reasons, it is believed clear that Claim 1 is allowable over *Ng*.

Independent Claims 3 and 16 are similar to Claim 1 in respect of the points discussed above, and Claims 6 , 8 and 20 are corresponding method claims. Accordingly, all of these claims also are deemed to be clearly allowable over *Ng*.

Independent Claim 16, which was also rejected over *Itoh* and *Takeuchi*, is directed to a recording control apparatus for controlling a recording element array, that comprises storing means for storing correction data for compensating a recording characteristic error of a recording element in the recording element array *by plural lines*, and driving means for driving each of the recording elements on the basis of the correction data. Also provided are control means for compensating for light emission characteristic dispersion by means of an average value of driving outputs corrected for the plural lines, by periodically changing, by sequentially reading the correction data from the storing means for the plural lines. Claim 16 also recites that the correction data are used by the driving means for one recording element, with respect to *each* line (that is, of the plural lines).

Itoh relates to an image forming apparatus that uses a sold-state scanning optical printhead. The *Itoh* printhead reproduces tonal image information using an intensity modulation method, in which light dispersion of each element is corrected for. Correction is also provided for fluctuations sensitivity characteristics of a photosensitive member that is utilized int he apparatus. As is correctly noted in the Office Action, PROM 25 stores correction data for

each of the LED elements 100, and are read out and used in sequence (col. 5, lines 15-17). What should be noted, however, is that the *Itoh* arrangement, like that of *Ng*, utilizes a single scan line of LEDs, not plural lines. While *Itoh* states that "LED head 10 is provided with a plurality of LEDs arranged parallel to the axial direction of photosensitive drum 1." (col. 3, lines 60-62), nothing in that passage (or elsewhere in *Itoh*) suggests or even hints that the LEDs are arranged in plural scan lines. On the contrary, it is noted that the "data of each picture element" are treated sequentially (col. 4, lines 53-63) and formed into batches of 128 counts of a clock signal, and are then outputted batch by batch. Nothing has been found, or pointed out, in *Itoh* that would even remotely suggest that the printhead of *Itoh* has more than one scan line. Accordingly, Claim 16, and corresponding method Claim 20, are believed also to be clearly allowable over *Itoh*, taken alone.

Even if *Takeuchi* is deemed to teach all that it is cited for, such would not provide what is missing from *Itoh* as a reference against Claims 16 and 20, and those claims are therefore believed to be clearly allowable over *Itoh* and *Takeuchi*, taken singly or in any permissible combination (if any exists).

A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other rejected claims in this application depend from one or another of the independent claims discussed above and, therefore, are submitted to be patentable for at least the

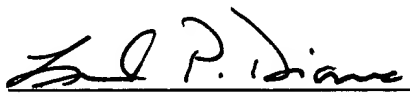
same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, individual reconsideration of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed clearly to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R. § 1.116. Accordingly, entry of this Amendment, as an earnest effort to advance prosecution and reduce the number of issues, is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



Leonard P. Diana
Attorney for Applicants
Registration No. 29,296

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200

NY_MAIN 457285v1